Urological Science 25 (2014) 25–27

Contents lists available at SciVerse ScienceDirect

Urological Science

journal homepage: www.urol-sci.com

Case report

Laparoscopic surgery to treat ureterosciatic herniation after ureteral stent failure

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ARTICLE INFO

Article history:
Received 14 December 2012
Received in revised form
14 January 2013
Accepted 25 February 2013
Available online 27 July 2013

Keywords:
laparoscopic surgery
repair
ureterosciatic herniation

ABSTRACT

We report on a patient who presented with left flank pain for 6 months. Computed tomography and intravenous urography revealed left ureterosciatic herniation with severe hydronephrosis. Antegrade placement of the ureteral double-J stent was performed and her symptoms subsequently subsided. These symptoms recurred after the removal of the stent 1 year later with persistent hydronephrosis and herniation. We performed laparoscopic ureterolysis, ureteral fixation to psoas muscle, and sciatic hernia repair with hyaluronan-containing mesh. The result was encouraging and the follow-up image at 6 months showed no hydronephrosis and no ureteral herniation.

1. Introduction

A ureterosciatic hernia is extremely rare and often results in recurrent infection or hydronephrosis. Computed tomography (CT) and magnetic resonance imaging are useful for diagnosis by the appearance of a curlicue ureter. Here we report a case of ureterosciatic hernia successfully treated using laparoscopic surgery.

2. Case report

The 70-year-old woman visited our urology clinic in February 2009 because she had left flank pain of 6 months' duration. She had undergone treatment for stress urinary incontinence with tension-free vaginal tape suspension in August 2008. Physical examination revealed knocking tenderness of the costovertebral angle on the left side. Results of a urinalysis were normal; however, the patient's serum creatinine level was elevated at 1.5 mg/dL (normal range 0.6–1.3 mg/dL).

Intravenous urography revealed left hydronephrosis and no clear visualization of the distal ureter. CT showed sciatic herniation of the left distal ureter into the inferior posterior aspect of the ischial spine with atrophy of the piriformis muscle (Fig. 1). The patient's symptoms subsided due to the antegrade placement of a ureteral double-J stent (Fig. 2). The double-J stent was removed 3 months later. However, recurrent hydronephrosis and pyelonephritis developed 1 year after the ureteral stent was removed. The patient's symptoms resolved after antibiotic treatment and double-J stent placement. The following year, the double-J stent was replaced every 6 months. Nevertheless, the ureterosciatic herniation persisted in the imaging study and was not corrected by placing a double-J stent alone. Thus, laparoscopic ureterolysis was performed for reduction of the hernial loop. Ureteral fixation to the psoas muscle was achieved with a 2-O polyglactin suture (Vicryl, Ethicon, Inc., San Angelo, TX, USA). Herniorrhaphy for closure of the defect was accomplished using a hyaluronan-containing mesh (Parietex Composite, Covidien, Norwalk, CT, USA) secured with 2-O Vicryl and polymer clips via a 12-mm periumbilical camera port and two 5-mm working ports (Fig. 3A and B).

The ureteral double-J stent was removed 2 months after completion of laparoscopic surgery. At follow-up, her plasma creatinine level was 0.89 mg/dL. Renal ultrasonography and follow-up imaging at 6 months revealed a smooth ureteral path with no evidence of recurrent hydronephrosis (Fig. 3C). At 1-year follow-up, the patient remained asymptomatic.

3. Discussion

Hernia of the ureter is rare, with approximately 130 cases reported in literature.[1–5] The most common site of ureteral herniation is the inguinal canal, but this may extend into the scrotum.

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1879-5226
http://dx.doi.org/10.1016/j.urols.2013.05.006

Fig. 1. Excretory phase of a computed tomography scan in (A) axial and (B) coronal views showing the sciatic herniation of the left distal ureter (arrows) into the inferior posterior aspect of the ischial spine with atrophic piriformis muscle.

Sciatic hernia is defined as the protrusion of the peritoneal sac through the sciatic foramen. Most hernias occur through the greater sciatic foramen[3] and contain the small intestine, Meckel's diverticulum, omentum, colon, ovary, fallopian tube, bladder, and ureter.[3] The predisposing factors include a defect in the pelvic fascia, atrophy of the piriformis muscle, congenital anomalies, and hip disease.

Imaging studies including intravenous urography, pyelography, and CT are useful in reaching a definitive diagnosis. The telltale curlicue ureter appears as a loop displaced laterally, inferiorly, and posteriorly[4,5] that leads to obstruction and U-shaped tortuosity at the level of the distal ureter.

Treatment is based on the severity of the clinical condition. Ureteral stent placement was demonstrated to be effective in several previous reports.[2] However, ureteral stent placement to relieve symptoms is a type of palliative treatment rather than curative therapy.[1,5,6] In the case reported here, stent treatment failed and severe ureteral adhesion developed. Open surgical correction has been previously described. Gee et al[6] reviewed 17 cases of ureterosciatic hernia from 1947 to 1996, and among them, 13 were corrected using open surgery techniques including manual reduction of the hernia, adhesiolysis, closure of the defect, and ureteral resection with reimplantation or reanastomosis.Gee et al[6] reported the first case of ureterosciatic hernia treated successfully by laparoscopic surgery. Identification of the defect, interposition of the mesh, and obliteration of the hernial defect were performed successfully and with minimal morbidity.[6] Moreover, laparoscopic surgery had the advantages of minimal invasiveness, better cosmesis, and faster recovery in comparison with open surgery.

In the current case, laparoscopic ureterolysis, reduction of the hernial loop, and ureteral fixation to the psoas muscle were

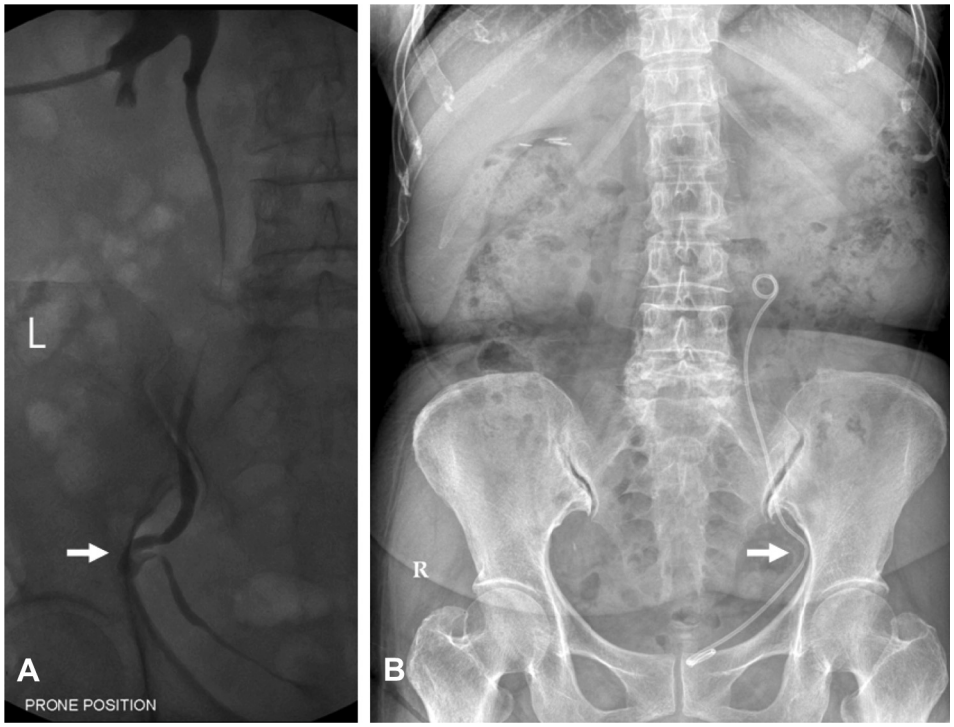

Fig. 2. (A) Antegrade pyelography shows a loop of the left distal ureter deviating posterolaterally through the greater sciatic foramen (arrow). This is known as a curlicue ureter, a characteristic finding of ureteral sacral herniation. (B) Antegrade placement of the ureteral double-J stent was performed for correction of ureterosciatic herniation.

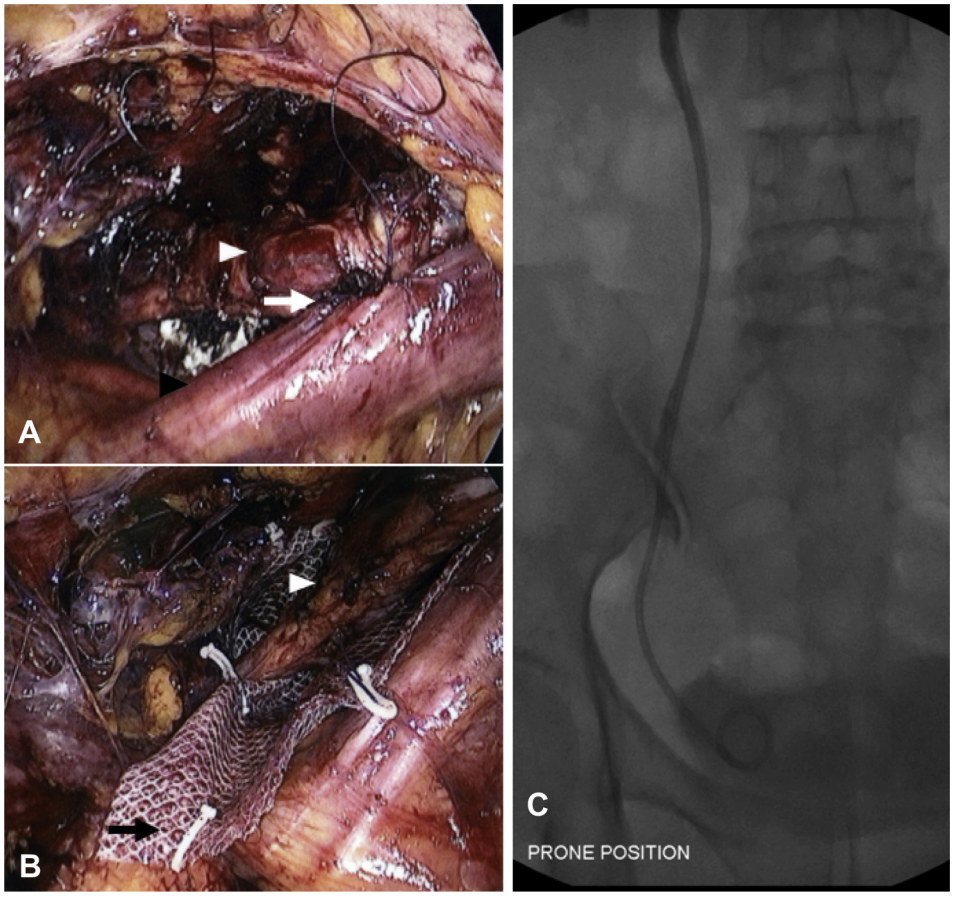

Fig. 3. (A) Laparoscopic ureterolysis, reduction of the hernial loop (white arrowhead), ureteral fixation (white arrow) to psoas muscle (black arrowhead) and (B) closure of the defect with hyaluronan containing mesh repair (black arrow) underlying the pelvic ureter (white arrowhead). (C) The ureter's path was unobstructed after surgery.

performed. Closure of the defect was accomplished using a hyaluronan-containing mesh, which offers a resorbable collagen barrier on one side to limit visceral attachment and reduce intestinal adhesion. This mesh may lower the risk of hernia recurrence, especially in cases such as that reported here, in which atrophic tissue was found adjacent to the herniation defect. In addition, ureteral fixation with the ipsilateral psoas muscle is useful in securing the ureter to a normal anatomic position.

Laparoscopic surgery is a feasible option as curative treatment of ureterosciatic herniation in cases of ureteral stent failure.

Conflicts of interest statement

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

Sources of funding

None.

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